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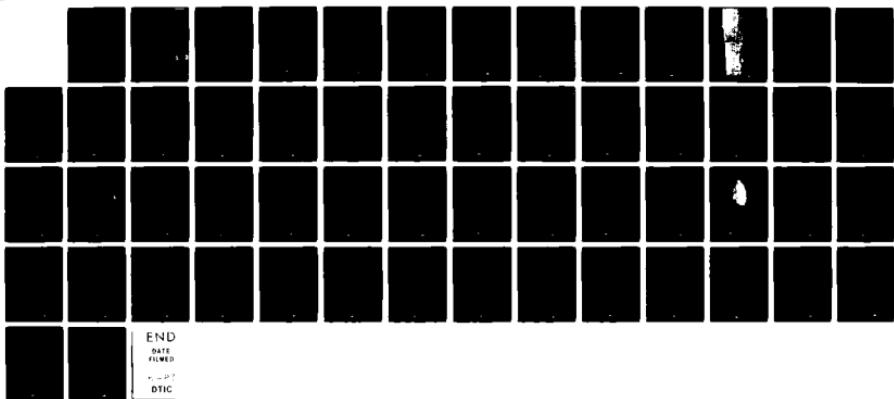
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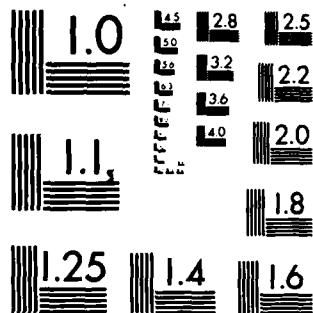
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REPORT OF INTENSIVE SURVEY
INSTRUMENTED RANGE ASSEMBLY AREA
FORT IRWIN
SAN BERNARDINO COUNTY, CALIFORNIA

ADDENDUM
SURVEY, TESTING, AND DOCUMENTATION
ASSEMBLY AND OFFENSE AREAS
FORT IRWIN, CALIFORNIA

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INSTRUMENTED RANGE ASSEMBLY AREA
FORT IRWIN
SAN BERNARDINO COUNTY, CALIFORNIA

ADDENDUM
SURVEY, TESTING, AND DOCUMENTATION
ASSEMBLY AND OFFENSE AREAS
FORT IRWIN, CALIFORNIA

Prepared for:

U.S. Department of the Interior
National Park Service
Interagency Archeological Services Division
San Francisco
450 Golden Gate Avenue, Box 36063
San Francisco, California 94102

Contract No. 8099-1-0001

Project funded by:

United States Army
National Training Center
Fort Irwin, California 92311

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Prepared by:

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Principal Investigators

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July 1982

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ABSTRACT

Cornerstone Research conducted a cultural resource survey on a portion of the Instrumented Range Assembly Area (IRAA), Fort Irwin, California, for the Interagency Archeological Services Division, National Park Service, Western Region, under contract no. 8099-1-0001. Funding was provided by the United States Army, National Training Center. The purpose of the investigation was to locate, record, and evaluate the cultural resources present. This investigation was performed as an addendum to an ongoing cultural resource investigation in the Assembly and Offense areas of Fort Irwin (see Eckhardt and Hatley 1982).

Twenty cultural resources were located and recorded during this investigation. Of these, twelve are prehistoric archaeological sites and eight are isolated artifacts. Descriptions and evaluations of these resources are provided herein. Expected impacts include those related to increased military use of the Fort Irwin Military Reservation. Recommendations are provided which address alternative cultural resource management strategies.

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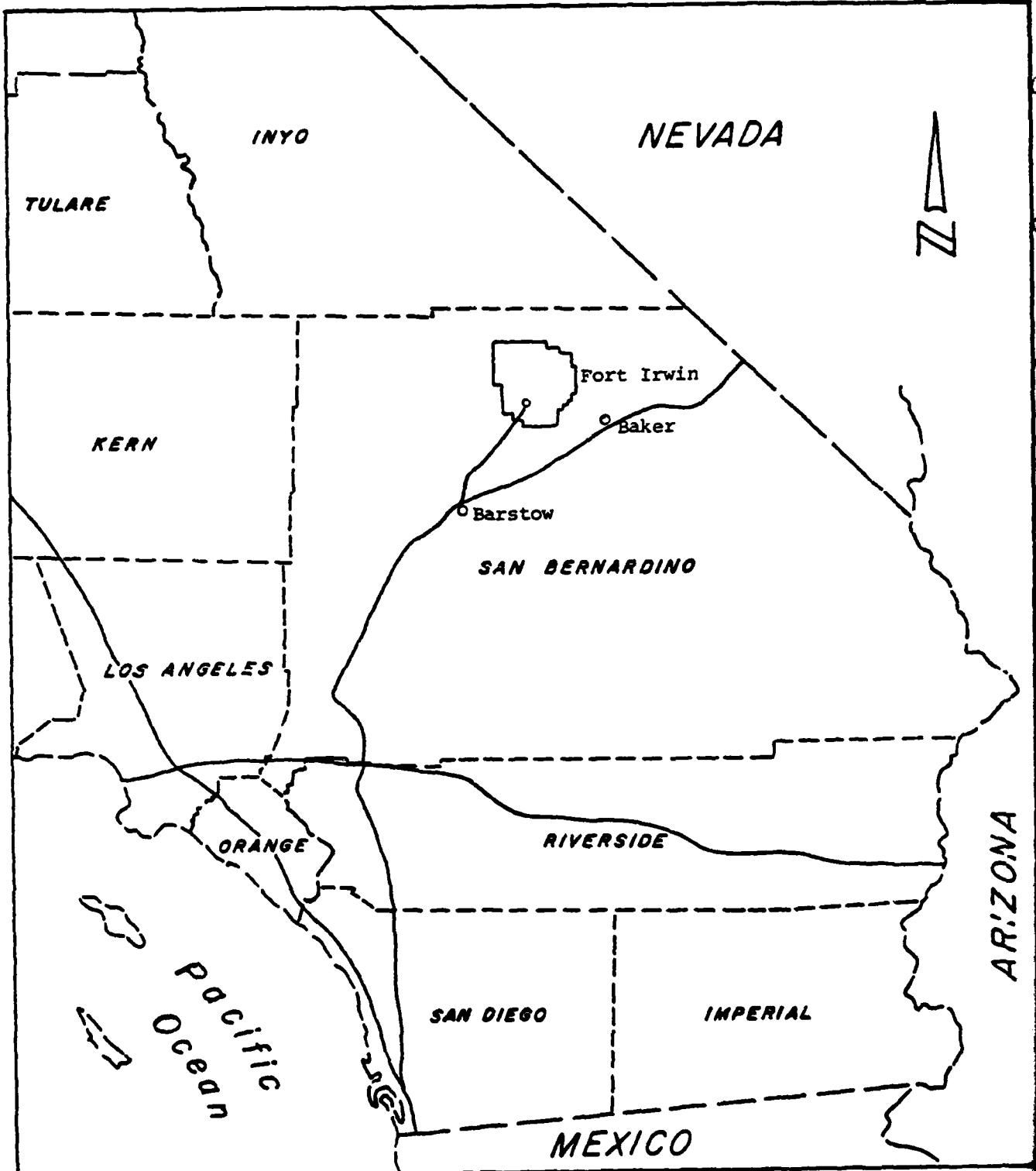
SECTION I
INTRODUCTION AND PROJECT SETTING

In compliance with the National Historic Preservation Act (Public Law 89-665, as amended), Executive Order 11593, and 36 CFR 800, Interagency Archeological Services Division, National Park Service, Western Region, contracted with Cornerstone Research for an intensive archaeological study of a portion of the Instrumented Range Assembly Area (IRAA) on the National Training Center, Fort Irwin, California. This exercise was undertaken with funds provided to the National Park Service by the United States Army, National Training Center. The project was added as an addendum to an ongoing archaeological study (Contract No. 8099-1-0001; Eckhardt and Hatley 1982) when the prime areas of the contract became unavailable for study due to military maneuvers. Upcoming military priorities determined the need for cultural resource investigation within this area of the military reservation.

Fieldwork was conducted between the dates of May 5 and May 13, 1981, with analysis and report documentation commencing in June and ongoing through December 1981, culminating in the determinations of resource significance and recommendations, as presented in the following report. Due to the nature of this addendum investigation, various background data have been eliminated from the following documentation; see the main body of Survey, Testing, and Documentation, Assembly and Offense Areas, Live Fire Maneuver Range, Fort Irwin, San Bernardino County, California for this information (Eckhardt and Hatley 1982).

Results of the project were positive; previously unrecorded cultural resource sites were observed and inspected in the portion of IRAA under investigation. Twenty cultural resources were discovered, located, and recorded, twelve of which were designated sites and the remainder noted as isolated finds.

Fort Irwin, a military reservation 643,000 acres in size, was originally withdrawn from Public Lands by the United States Army in 1952. The reservation is situated in the Mojave Desert, thirty-five miles northeast of Barstow, California, and nineteen miles west of Baker, San Bernardino County, California (Figure 1). During its military history, the fort has variously been under the command of Reserve and Regular Army forces, although it has been under the direct jurisdiction of the Secretary of Defense since its withdrawal. A full-scale cultural resource management program has recently been initiated, but at the present time no comprehensive inventory or adequate assessment of the majority of cultural resources present within the reservation has been completed. Instead, large-scale projects and training exercises conducted by Regular Army and Reserve forces have been



assessed for potential adverse impacts to resources in those select portions of the reservation scheduled for activity (Alsoszatei-Petheo 1978; Kaldenberg 1978, 1980a, 1980b; Davis, Eckhardt and Hatley 1980, 1981; Bull 1980; Hanna et al. 1981).

The portion of the Instrumented Range Assembly Area considered in this investigation is a fifteen-square-kilometer area in the southwest corner of the Fort Irwin Military Reservation within the Force-on-Force Instrumented Range (Figure 2). The current project was to provide an on-foot survey of this portion of the assembly area. However, due to time constraints and the variable topography within the area, Cornerstone Research surveyed approximately 55 percent of the allotted area, as illustrated on Figure 2.

The topography of the IRAA includes gently sloping alluvial fans in the western, southwestern, and northeastern portions and steep, hilly areas elsewhere, with numerous outcrops of large granitic boulders (Photographs 1 and 2). Several prominent, very well-developed washes course north-south through the area, creating steep cut banks and wide terraces. Soils vary from tan alluvial silts, sands, and gravels to sands and silts overlain by coarse decomposing granite. No desert pavement surfaces were observed within the areas surveyed. Vegetation consists of species typical of the creosote bush scrub plant community, with the addition of sporadic Joshua trees, especially in the southwestern portion.

The large intermittent washes have caused some erosional disturbance throughout the surveyed area. Numerous dirt roads and military debris, vehicle tracks, and fox holes also occur in the area.

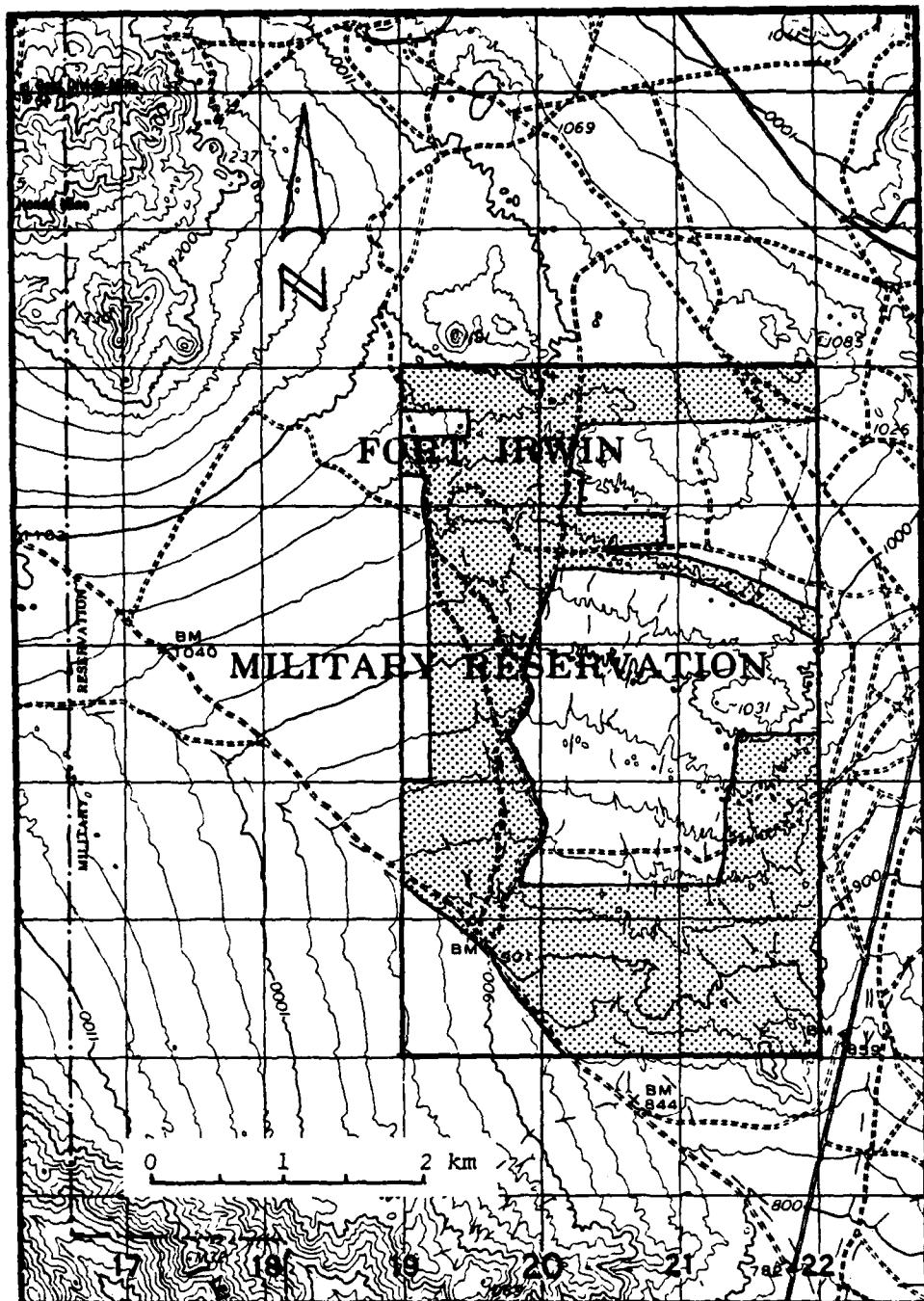
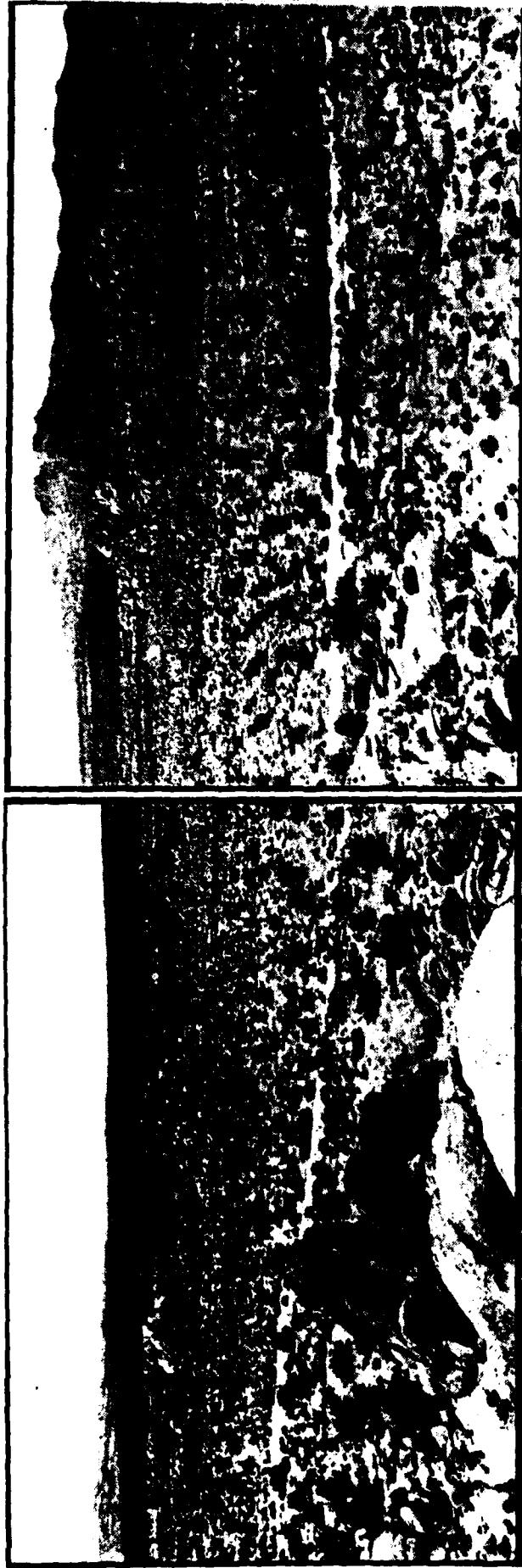


Figure 2

The project area within the Instrumented Range Assembly Area is outlined on the above figure; the stippled areas are the portions surveyed during the current study. The map is based on the DMATC series of topographic maps, Lane Mountain Quadrangle.



Photographs 1 and 2: These photographs are a portion of a panoramic series toward the west of the IRAA study area. The view shows the project's physiographic setting, including loosely compacted, decomposed granitic silts, sands, and gravels; large boulder piles; and a thinly distributed creosote bush plant community with occasional Joshua trees.

SECTION II

PROGRAM METHODS AND DOCUMENTATION

On-foot survey in the IRAA began in the northeast corner on May 5, 1981, and continued through May 8. Additional survey was conducted on May 11 through 13. Approximately 300 person-hours were expended during this survey.

Investigation teams varied from three to seven people per day. Overall supervision of the crews during the fieldwork was the responsibility of crew chief personnel, who coordinated with the co-principal investigators. The crew chief was also responsible for daily maintenance and collection of field records and personal field notes.

Direction of travel of the on-foot survey transects varied and was highly dependent on the terrain encountered. Crew members surveyed in thirty-meter-interval transects and in a herringbone and zig-zag patterns to fully cover the study area. As the project evolved, it was quickly determined that the entire fifteen square kilometers could not be surveyed within the allotted time frame. Therefore, in conjunction with the co-principal investigators, the crew chief directed the survey into specific study areas in order to survey a representative sample of the various physiographic settings of the area.

Each culturally related site or isolated find located during the study was recorded on archaeological site data forms provided by Cornerstone Research--a short form for isolates and an official State of California site form for the more extensive cultural deposits. Guidelines for differentiation of sites, isolates, and clusters were used during the project, as discussed in Section IV of Eckhardt and Hatley (1982), with very similar results. Trinomial designations for the sites encountered have been received from the San Bernardino County Museum, as well as SBCM designations for the isolates (see Table 1).

Upon encountering a culturally related deposit or feature, the study team closely examined the surrounding area to delimit the areal extent of the deposit's surface manifestation. Data recorded on the site forms included site location and dimensions, amounts and types of flaked lithic and other artifactual materials, any site disturbance, proximity of water sources, and brief environmental and physiographic information. Sites and isolates were marked with a data chip and all locational information was referenced to this position. Reference bearings were taken using hand-held magnetic compasses relative to local physiographic prominences from the position of the data chip. Locations of positions used for triangulation were marked on the supervisor's field map. Photographs were obtained of diagnostic

site materials and of overall site areas, and the locations of particular intrasite artifacts were plotted onto field sketch maps, as appropriate. Constituent site materials remained in the field, but isolated finds were recovered from the field for continuing analysis. In addition to standard cataloging processes (washing, weighing, measuring, etc.), the recovered artifacts were subjected to analysis of various technological attributes. Specific characteristics involved in this analysis are discussed in Section IV of Eckhardt and Hatley (1982), and each artifact is detailed in the following section. Site records and maps, photograph log sheets, recovered artifacts, and plant or soil specimens have been collated, cataloged, and analyzed and are currently curated at the Cornerstone Research laboratory.

SECTION III

RESULTS OF THE INVESTIGATION

During the survey in the Instrumented Range Assembly Area, twenty cultural resources were located and recorded (Table 1; see Appendix A for specific locational data). Of these, eight have been designated isolated finds and twelve noted as sites. Following are descriptions of the cultural sites and isolated artifacts noted during the investigation.

4-SBr-4864, Flake Scatter. This light-density flake scatter is located along a ridgeline between a well-developed intermittent wash on the west and a minor seasonal drainage on the east. Also to the east is a large granitic outcrop. Area vegetation includes species typical of the creosote bush scrub plant community; the soil is light tan alluvial sands and silts and overlying gravels. The site is situated at an elevation of 2,900 feet above mean sea level. The area is traversed by military and off-road vehicle tracks; rodent burrows are also visible in the site.

Most of the site materials are concentrated along the eastern edge of the ridge in an area 350 meters long and 80 meters wide (Figure 3). A few outlying artifacts were observed outside this area, including a scraper 290 meters to the southwest, which was subsequently collected from the field (see detailed description below).

Over seventy-five flakes and flake-based tools were observed, but no cores or other cultural artifacts were noted. Lithic materials include high-grade chalcedonies and cherts, basalt, obsidian, and quartz, with the chalcedonies predominant. Artifacts are thinly spread throughout the main site area and only a few concentrations were noted.

Flakes are relatively small and thin, with few over six centimeters in length. Most are secondary flakes--a small amount of cortex was noted on only two or three flakes. Numerous previous flake scars on the dorsal face and prepared or crushed platforms are prominent on the flakes. Utilization and/or edge modification is evident on several flakes, indicative of use as cutters or scrapers.

The recovered tool is a flake-based, multidirectional scraper-type tool of a brown chalcedony, 6.7x4.2x2.1 centimeters in size and 67 grams in weight. The tool has been unifacially flaked by hard-hammer percussion, leaving a steeply angled, "domed" shape with about fifteen flakes removed. Feather terminations predominate and compression rings are present on most of the flake scars. Slight iron and manganese oxidation are visible

Table 1
INSTRUMENTED RANGE ASSEMBLY AREA SURVEY
SITM SUMMARIES

| <u>Site No.</u> | <u>Description</u> | <u>Disposition/ Drawn, Photographed</u> |
|-----------------|---|---|
| <u>Sites</u> | | |
| 4-SBr-4864 | Lithic scatter, 340x415 m, 75-100 flakes and flake-based tool types, most flakes are secondary, 90% chalcedony, 8% basalt, 2% obsidian, quartz, moss agate | 1 scraper collected Drawn |
| 4-SBr-4865 | Stacked rock cairn, 80 cm diameter, 130 cm high, constructed of granite cobbles | Left in situ Drawn |
| 4-SBr-4866 | Rock shelter, 3 m high, 2 m wide, 1.5 m deep; 1 semi-circular hearth, 75x30 cm, darkened soil and fire-darkened granite cobbles; flake scatters surrounding shelter, 200x30 m, secondary flakes, chalcedonies, jasper, basalt, quartz, 1 chalcedony scraper | Left in situ Drawn |
| 4-SBr-4867 | Rock shelter, 10x9 m; 1 bifacially flaked chalcedony tool half-buried within shelter, 1 possible metate toward front of shelter | Left in situ Drawn |
| 4-SBr-4868 | Flake scatter, 25x15 m, 80+ small secondary flakes, 90% chalcedony, 10% jasper | Left in situ Drawn |
| 4-SBr-4869 | Lithic scatter, 60x75 m; 75+ flakes, most secondary, chalcedonies, jasper, quartz, basalt; 1 quartz core reduction area with cores and primary and secondary flakes; 4 projectile point/biface fragments; 1 quartz chopping tool; 2 metate fragments, both unifacially ground | Left in situ Drawn, Photographed |
| 4-SBr-4870 | Flake scatter, 65x120 m, 12-15 secondary flakes, 1 basalt, 1 quartz, rest chalcedonies and jasper | Left in situ Drawn, Photographed |
| 4-SBr-4871 | Site complex of 1000+ flakes, 95%+ secondary, chalcedonies, basalt, quartz, jasper, opalized chalcedony, few core reduction areas, projectile point and biface fragments, metate, probable mano, burnt animal bone, quartz battering tool, 25+ pottery sherds, 700x300 m | Left in situ Drawn, Photographed |
| 4-SBr-4872 | Lithic scatter, 10x15 m, 30 secondary flakes, primarily quartz, some chalcedony, 1 small granite boulder with milling implements; 1 chalcedony projectile point 250 m northwest; less than 10 flakes 350 m south | Left in situ Drawn, Photographed |

Table 1
 INSTRUMENTED RANGE ASSEMBLY AREA SURVEY
 SITE SUMMARIES
 (continued)

| <u>Site No.</u> | <u>Description</u> | <u>Disposition/ Drawn, Photographed</u> |
|-----------------|--|---|
| 4-SBr-4873 | Lithic scatter, 10x100 m, 8 black basalt secondary flakes, 1 basalt typological blade | Left in situ |
| 4-SBr-4874 | Lithic scatter, 1x5 m, 6 chalcedony secondary flakes, 1 chalcedony typological blade, 1 chalcedony biface fragment | Left in situ Drawn, Photographed |
| 4-SBr-4875 | Lithic scatter, 150x30 m, 30+ black basalt secondary flakes, 1 chert flake, 1 basalt scraper, 1 lanceolate-shaped biface | Left in situ Drawn, Photographed |

Isolated Finds

| | | |
|-----------|---|----------------------------------|
| SBCM-5045 | 2 isolated secondary flakes, quartz and chert | Left in situ |
| SBCM-5046 | 1 isolated secondary chalcedony flake | Collected |
| SBCM-5047 | 1 isolated secondary chalcedony flake | Left in situ Drawn |
| SBCM-5048 | 1 isolated secondary chalcedony flake | Left in situ |
| SBCM-5049 | 1 isolated secondary chert flake | Left in situ |
| SBCM-5050 | 1 isolated obsidian flake | Collected |
| SBCM-5051 | 1 isolated quartz flake, blade-like | Collected |
| SBCM-5052 | 1 isolated jasper projectile point fragment | Collected Drawn, Photographed |

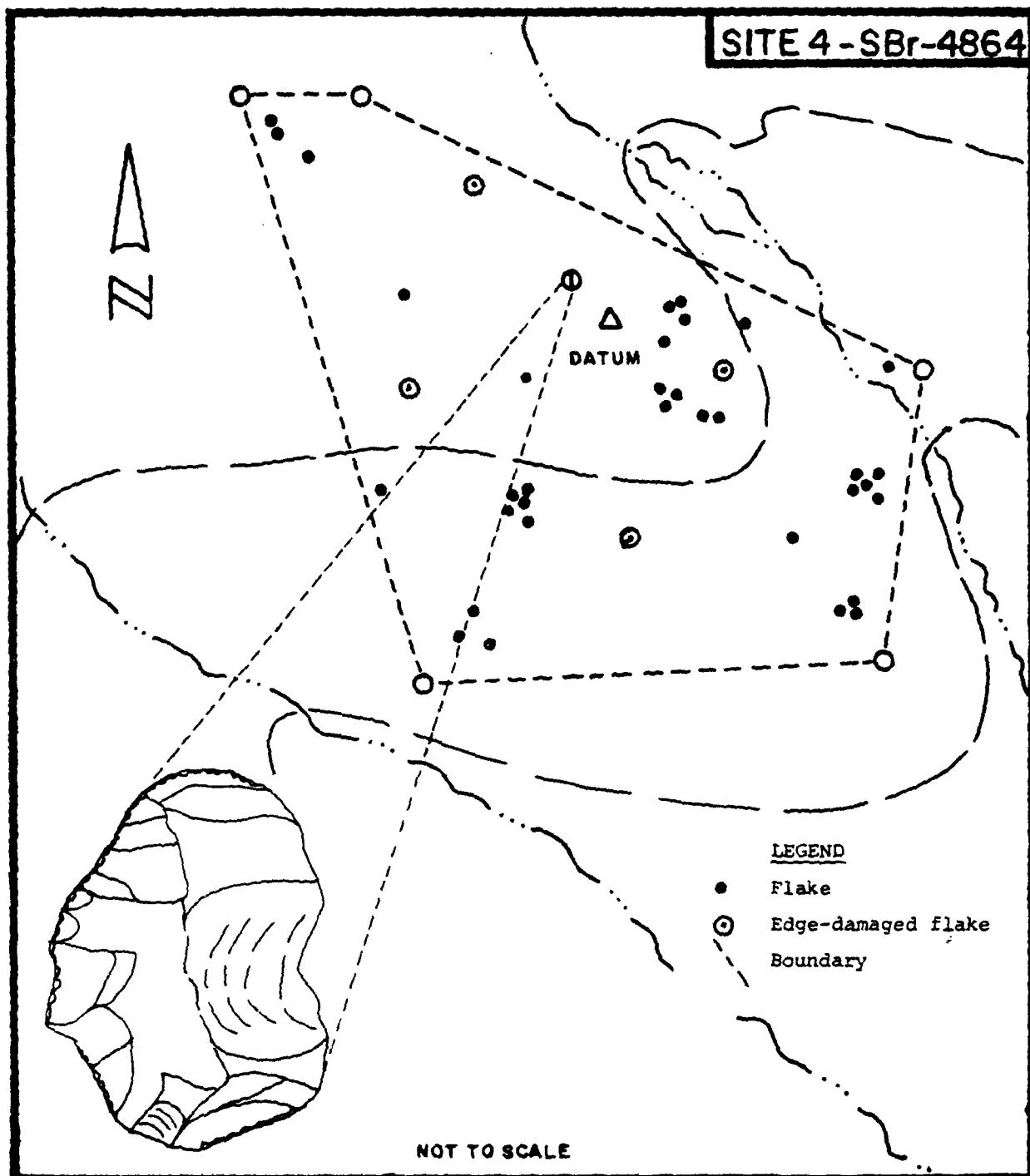


Figure 3

Field sketch of 4-SBr-4864 and associated scraper-like device, as described in the text. See Appendix A for specific site location.

on the scraper, and it is moderately patinated. Use wear is evident along about half of the scraper's edges. No other artifacts were recovered from this site.

4-SBr-4865, Rock Cairn. This site is located at an elevation of 2,955 feet above mean sea level within a slightly hilly aspect of an alluvial fan just south of the project boundary. The creosote plant community continues into this area, and soils are sands and silts with overlying gravels. Several intermittent drainages are in the general area, but none immediate to the cairn.

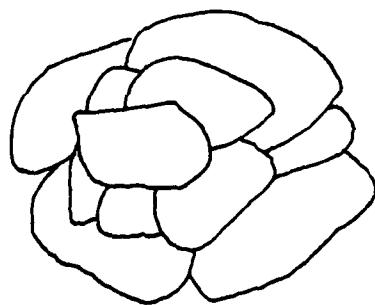
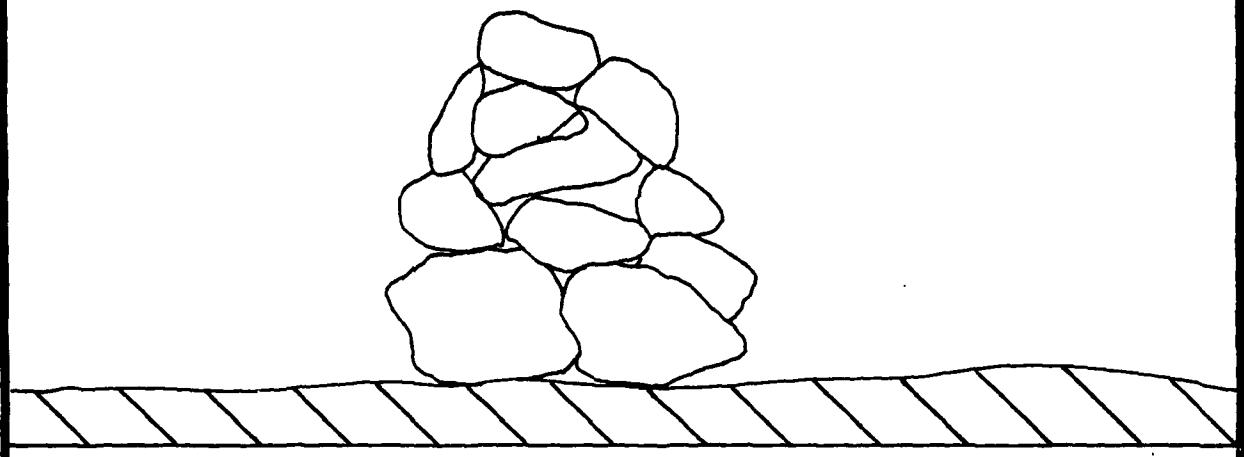
The rock cairn is a circular stacked feature constructed of locally available granitic cobbles which average thirty to forty centimeters in diameter (Figure 4). Four distinct tiers of these cobbles are stacked on two larger boulders and one additional stone is on top of the entire feature. The overall height of the cairn is 130 centimeters; the diameter at the base is approximately 80 centimeters. No prehistoric or historic artifacts were noted in association with this feature, although the cairn was not dismantled for thorough examination.

4-SBr-4866, Rock Shelter and Flake Scatters. This site area is located in a grouping of large granite boulders within the slightly hilly alluvial fan area toward the southern portion of the project at an elevation of 3,035 feet. An intermittent drainage occurs approximately 100 meters to the east. Vegetation in the area is the typical creosote bush scrub plant community, and the soils are tan sands and decomposing granite.

The site consists of a rock shelter within a granite boulder and associated hearth remains and flake scatters (Figure 5). The boulder is approximately seven by seven by seven meters in size, and the shelter area is three meters high, two meters wide, and one and one-half meters deep. The hearth is located fifty centimeters out from the shelter opening. It is seventy-five centimeters long and thirty centimeters wide, opens toward the rock shelter, and is constructed of fire-darkened granite cobbles arranged in a crescent shape. The hearth area also contains slightly darkened soil, and charcoal pieces were observed inside the rock shelter.

Artifacts associated with the rock shelter occur in various-size flake scatters in the area of the shelter. Most are secondary flakes of chalcedony, with some chert, jasper, basalt, and quartz. One chalcedony scraper was also recorded and is described in more detail below. A flake scatter immediately in front of the rock shelter encompasses an area ten to twelve meters in diameter and consists of thirty to forty high-grade chalcedony and chert flakes, one jasper flake, and several basalt flakes. Behind and south of the rock shelter is one secondary chalcedony flake, and directly east and adjacent to the shelter

SITE 4-SBr-4865



Not to Scale

Figure 4

Field sketch of 4-SBr-4865, as described in the text. See Appendix A for specific site location.

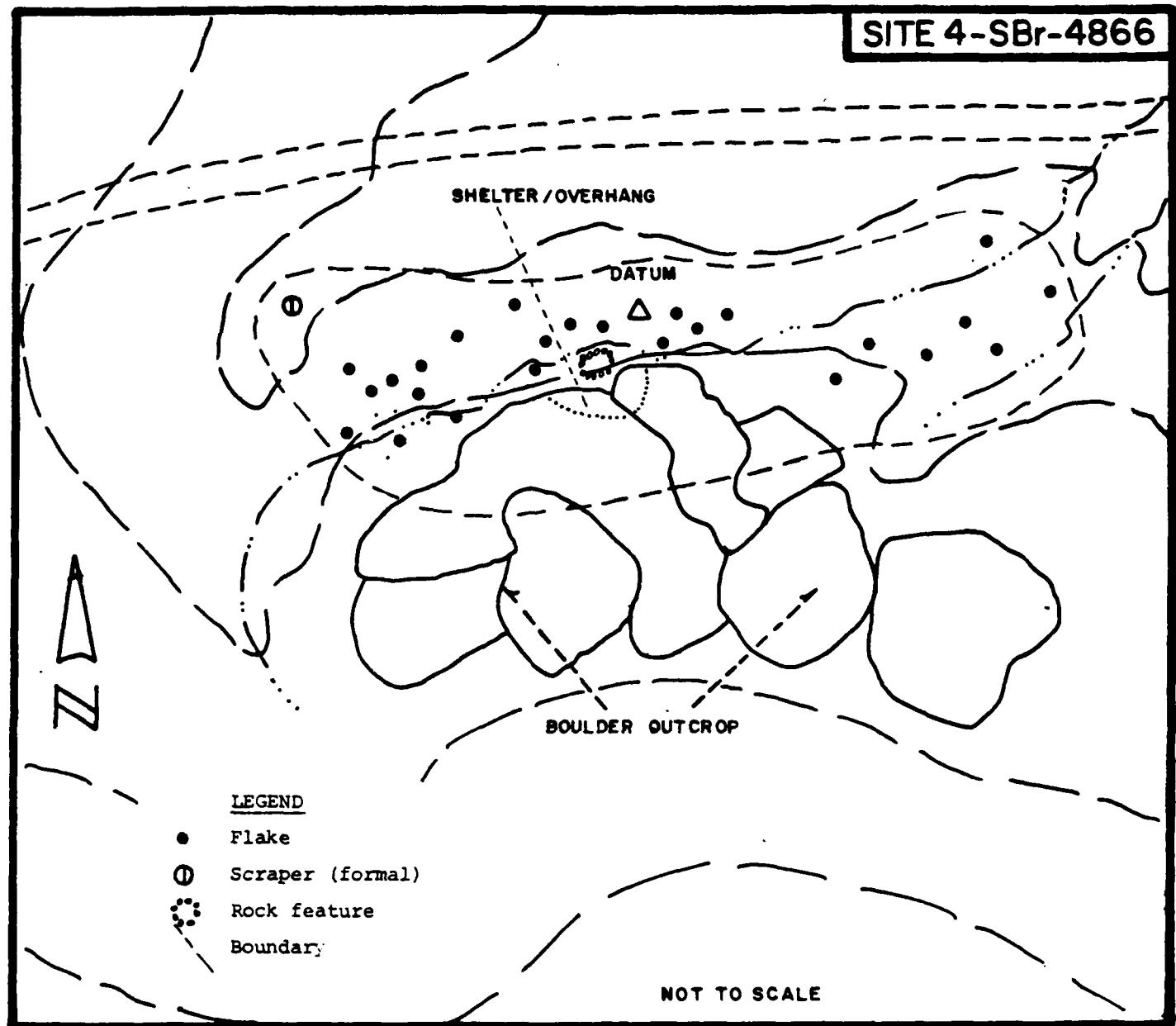


Figure 5

Field sketch of 4-SBr-4866, as described in the text. See Appendix A for specific site location.

are fifteen-plus flakes. A few flakes were observed west of the shelter and also to the south between the rock shelter and another large boulder.

The only tool observed is a chalcedony scraper twenty to twenty-five meters west of the shelter. The artifact is 5.0x3.0x0.75 centimeters in size and has a small amount of cortex remaining along one edge. It is highly patinated (unusual at this site) and has an obvious worked edge, platform, well-developed bulb of percussion, and numerous inclusions in the lithic material. Its association with the rock shelter is somewhat vague. None of the artifacts observed were removed from the site and no prominent disturbance has occurred to the area.

4-SBr-4867, Rock Shelter with Associated Artifacts. This site is located at an elevation of 3,540 feet in an area of low hills with many granitic boulder outcrops and shelters or overhangs. An intermittent drainage occurs in the immediate area. Although there is sparse vegetation within the shelter, the area's typical creosote bush scrub plant community exists outside the shelter. The soil inside the rock shelter is tan sands and silts and decomposing granite. Some evidence of animal disturbance was noted inside the shelter.

The site consists of a rock shelter with two associated artifacts (Figure 6). Approximate dimensions of the sheltered area are ten by nine meters. One bifacially flaked tool of high-quality chalcedony was noted semi-buried in the surface sands toward the back of the shelter. The tool is about seven by four centimeters in size and has evidence of utilization along one edge. A possible metate is located toward the front of the shelter area. This artifact is approximately twenty-five by thirty-seven centimeters in size and varies from five to ten centimeters in thickness. Most of the original external surface of the metate is extremely weathered and exfoliated, although several smooth, white surfaces were noted toward the center of the stone. There is also a slight depression at the center. Neither of these artifacts was recovered from the field.

4-SBr-4868, Flake Scatter. This site is situated in the northern portion of the study area. It is located at an elevation of 3,543 feet, approximately 100 meters west of SBr-4867 in an area containing many granite boulder outcrops and shelter or overhang areas. Species from the creosote bush scrub plant community predominate, and the soils are light tan sands and silts and decomposing granite alluvium. Military vehicle tracks are present within the northeastern aspect of the site.

The flake scatter includes approximately eighty flakes in an area twenty-five by fifteen meters (Figure 7). Most of the flakes are small and secondary, ranging from 0.5 to 0.2 centimeters in length. Approximately 90 percent are chalcedony, 10

SITE 4-SBr-4867

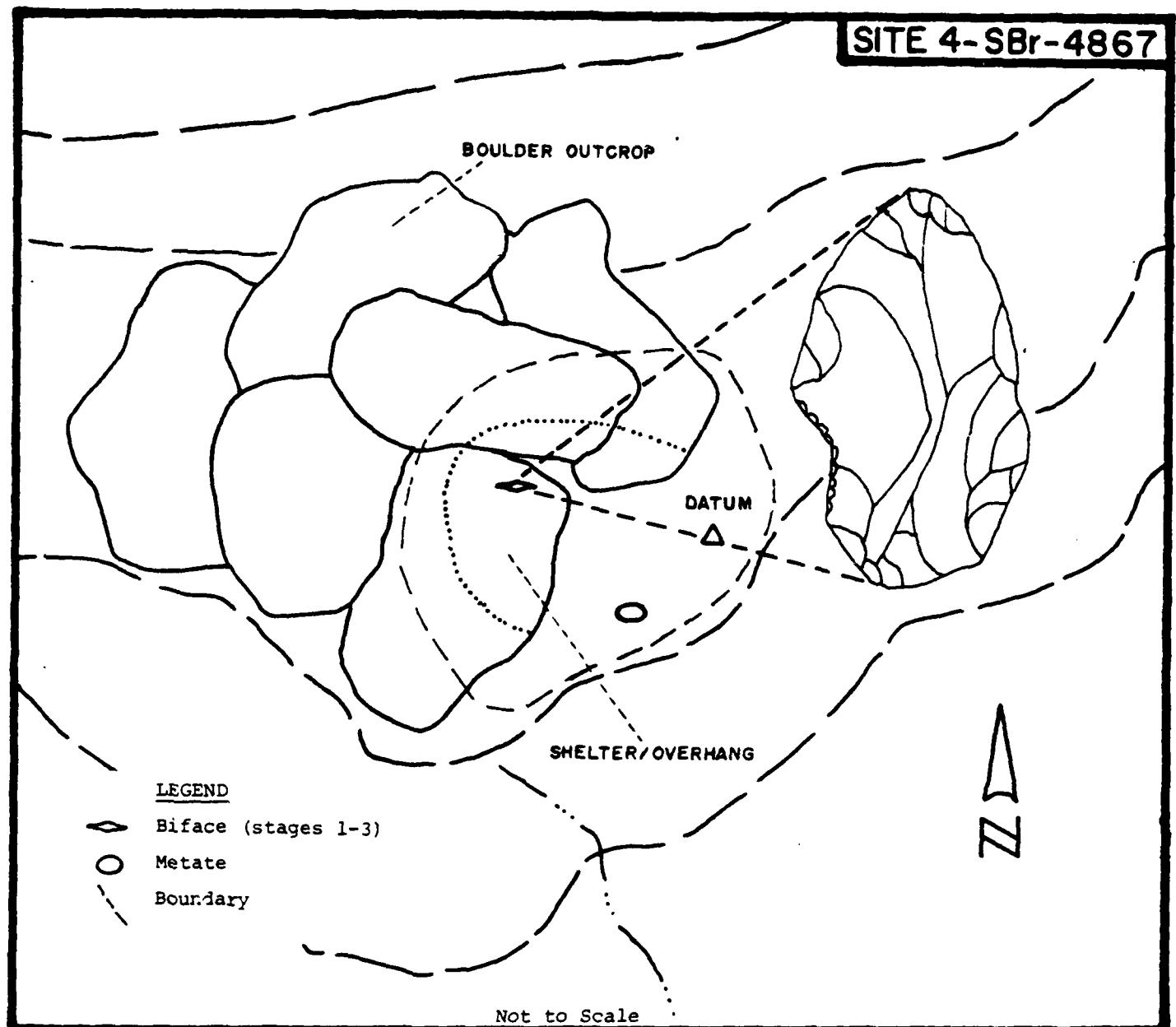


Figure 6

Field sketch of 4-SBr-4867, as described in the text. See Appendix A for specific site location.

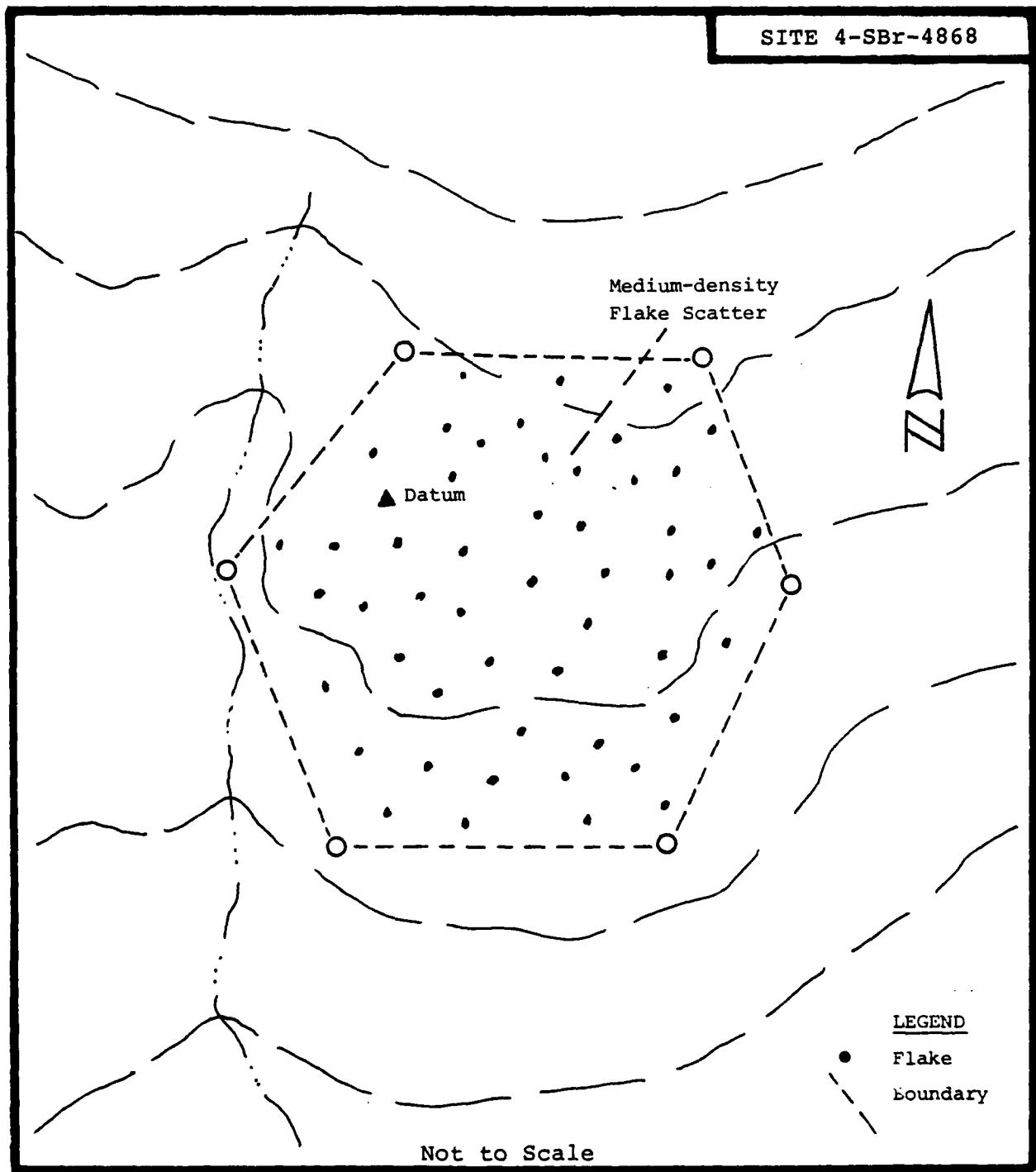


Figure 7
Field sketch of 4-SBr-4868, as described in the text. See Appendix A for specific site location.

percent are jasper, and 99 percent of the flakes have no visible remaining cortex. No cores or other artifacts were observed at this site, and none of the artifacts were removed from the field.

4-SBr-4869, Flake Scatter Midden and Associated Lithic Materials. This site encompasses an area sixty by seventy-five meters at an elevation of 3,477 feet just west of a dirt road on a sandy alluvial fan. An extensive area of granite boulders is immediately to the north, and several intermittent washes occur to the west--a large well-developed wash 250 meters to the west and a smaller drainage 100 meters west. Vegetation is the creosote bush scrub plant community. In addition to the dirt road along the eastern border, various military vehicle tracks are present in the southeastern portion of the site.

The site contains several elements--flaked lithic scatter, core reduction area, metate fragments, projectile point fragments, and a probable subsurface component (Figure 8). Seventy-five-plus flakes were observed within the site area. Most of the flakes are secondary, many appear heat treated, and most are bifacial thinning flakes. Lithic materials noted include jasper, quartz, basalt, and an extremely wide range of chalcedonies. No cores were observed in association with these flaked materials.

A quartz core reduction area was recorded along the western portion of the above flake scatter. This concentration contains several cores and a grouping of primary and secondary flakes.

The four projectile point fragments recorded during the reconnaissance of this site are located in various areas of the scatter--point A along the eastern border and points B, C, and D in close association within a somewhat denser aspect of the flake scatter in the southwestern portion of the site. Point A is a large biface fragment, 60x4.0x0.5 centimeters (at its widest portion), which may have functioned as a large knife or spear. Considering the amount of impurities in the lithic material, this biface has been well worked, with numerous flakes having been removed from both faces and no remaining cortex. The piece has fractured along one edge, and internal evidence of burning after fabrication is visible in a small crevice of the material.

Point B is the basal portion of a probable atlatl point, 2.2x2.0x0.2 centimeters in size, of a white translucent chalcedony. The fragment is slightly convex with a fan-shaped flake scar along the basal edge and numerous pressure flake scars on both the ventral and dorsal faces.

Point C is of a brownish white chalcedony, measures 3.5x2.0x0.3 centimeters, and is an irregularly shaped biface. One edge is thin with abundant edge wear evidence; the other edge is thick and unused. These morphological attributes indicate that point C was used as a knife.

SITE 4-SBr-4869

LEGEND

- ⊕ Scraper (informal)
- Projectile point
- Boundary

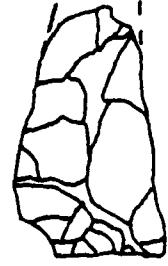
Medium
Flake Scatter

○ Metate
Fragment

○ Metate
Fragment

Datum

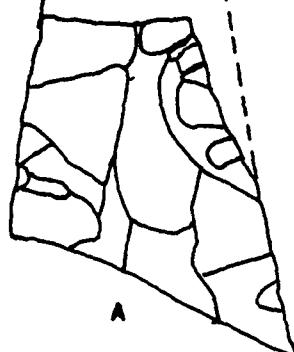
Heavy
Flake
Concentrations



C



B



A

Not to Scale

Figure 8

Field sketch of 4-SBr-4869 and several associated bifacial artifacts, as described in the text. See Appendix A for specific site location.

Point D is made of a similar chalcedony as point C and is 3.0x3.5x0.8 centimeters in size. Its most notable characteristic is that it is apparently unfinished--one edge has been thinned, but the other is unfinished, and the biface has been fragmented. No evidence of use wear is visible.

Two metate fragments were located six meters apart in the central portion of the overall flake scatter. Both are of a fine-grained granite, very different from the local granitic material. The first metate was 75 percent embedded when located and is a long rectangular fragment, approximately 52.5x17.0x10.0 centimeters in size. It has been highly ground on the upper face, has evidence of battering along one long edge, and is fragmented along the other long edge.

The second metate, also a fragment, is more circular in shape, thirty-five centimeters in diameter across the top and nineteen centimeters tall, with a six-centimeter-deep ground area on the upper surface. It was also located approximately 75 percent embedded, and the ground surface is larger and more polished than the above metate.

A quartz tool was noted several meters north of the first metate. This artifact appears to be a chopper- or masher-type tool from the evidence of battering and is the only quartz tool noted at the site. One probably burnt granite stone was also observed. 4-SBr-4869 probably contains a subsurface aspect, although information regarding potential depth and subsurface material distribution is unavailable from this level of investigation. Ongoing military tank activity has previously disrupted the site, and future maneuvers are anticipated to negatively affect the integrity of the data present within the resource. None of the artifacts noted at this site were removed from the field.

4-SBr-4870, Flake Scatter. This light-density flaked lithic scatter encompasses an area approximately 65x120 meters. It is located at an elevation of 3,380 feet in an intermittent wash between several outcrops of granite boulders. Area vegetation includes species of the creosote bush scrub plant community, but is sparse in the wash setting. Soils are light tan sands, silts, and gravels, with low mounds of decomposing granite outside the site area. Evidence of site disturbance includes vehicle tracks throughout the area, recent military activities as seen by a rock ring and associated military debris, and probable erosion or redeposition of the site materials from wash-related action.

The flake scatter consists of about fifteen to twenty flakes, although wash soils may be obscuring additional materials (Figure 9). No cores or other artifactual materials were observed. The flakes are made of a wide variety of lithic

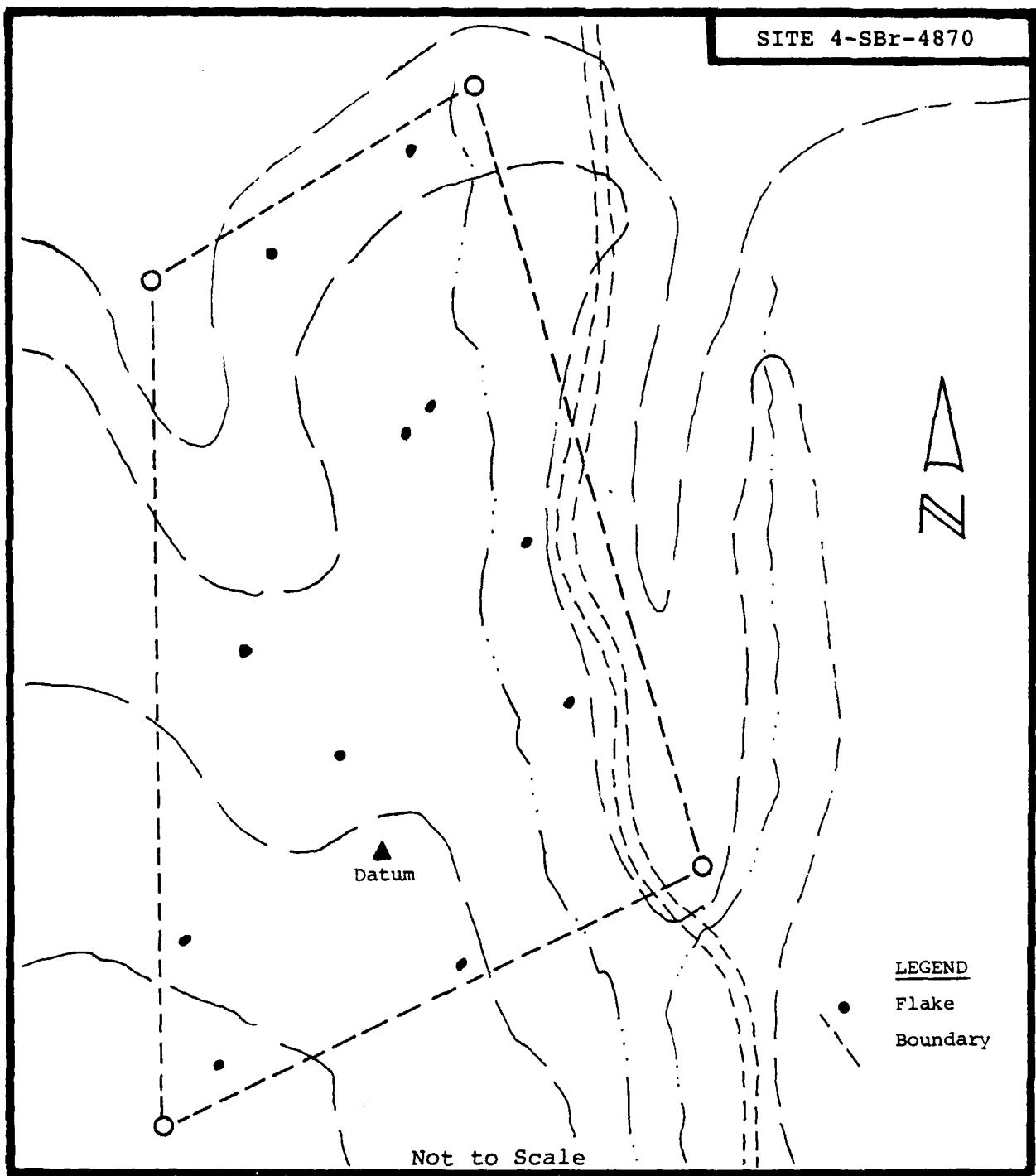


Figure 9
Field sketch of 4-SBr-4870, as described in the text. See Appendix A for specific site location.

materials--primarily white chalcedony with inclusions, jasper, opal-like chalcedony, basalt, and other various-colored chalcedonies.

During detailed in-field observations of the site materials, numerous individual flake characteristics were noted. The majority of the flakes are possibly heat treated and most are secondary--only two flakes were noted with any remaining cortex. Flakes are predominantly small and very thin. Possible utilization was noted on the edges of several, although the evidence is not definitive. Three flakes have a diffuse bulb of applied force indicating hard-hammer percussion, and one blade-like fragment was observed with relatively long vertical flake scars. None of these flakes were removed from the field.

4-SBr-4871, Cultural Resources Complex. This site complex, approximately 700x300 meters in size, is located on a relatively flat alluvial fan with a well-developed wash to the west. SBr-4869 is located just to the north and may be associated with this site, as well as SBr-4870 200 to 250 meters east and SBr-4872 west of the wash. Vegetation on the site is species typical of the creosote bush scrub plant community, and soils are light tan sands and silts and decomposing granite. Evidence of past disturbance includes dirt roads and vehicle tracks throughout the site area, rock rings with associated military debris, a recent fire hearth, and several military control barrels within the site.

Briefly, the site complex includes 1,000+ flakes, projectile point and biface fragments, 25+ pottery sherds, 2 metates and 1 mano, 1 cobble tool, and 1 piece of burnt bone (Figure 10). The flakes are spread throughout the site area, as well as being in several light concentrations. Flake density is greater along the wash to the west and no flakes were noted within the granite boulders to the north. Surface soil is such that additional flakes would undoubtedly be encountered through closer examination. A wide variety of lithic materials are represented--fine-grained chalcedonies, basalt, quartz, jasper, and opalized chalcedony. The flakes are secondary, with only a few primary flakes, and are primarily small and medium in size. Individual flake characteristics were not noted during this level of reconnaissance, although retouch was observed on several chalcedony flakes.

Projectile point or biface fragments were also observed throughout the site. One chalcedony biface or blade fragment is about 4.0x2.5 centimeters in size and has numerous flake scars on both faces of the fragment. A midsection of a chalcedony projectile point was noted, also finely worked and approximately 3.0x1.7 centimeters in size. A larger chalcedony biface fragment was observed, measuring 5.0x3.7x0.75 centimeters (this well-worked biface is very similar to point A noted at SBr-4869). A

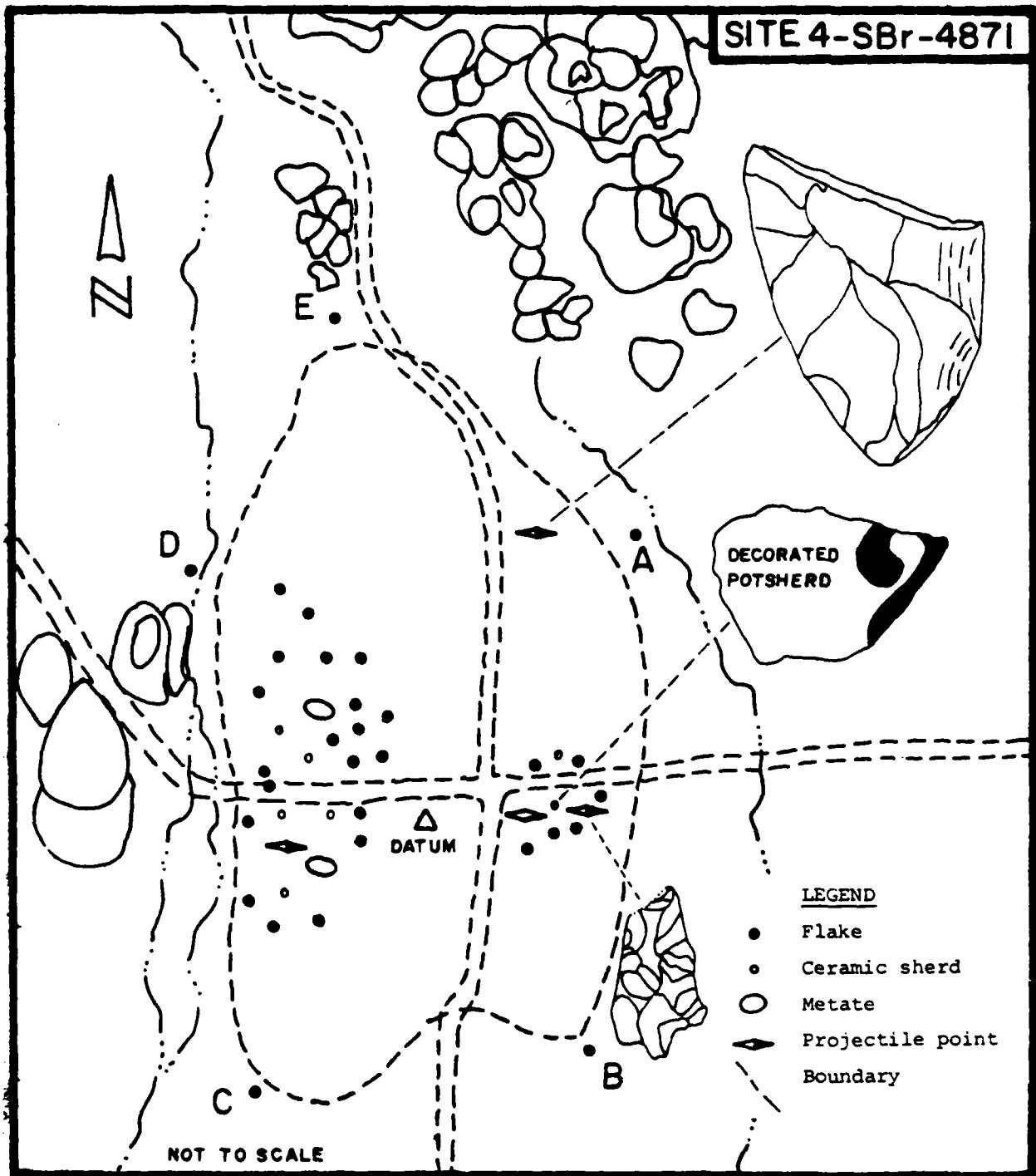


Figure 10

Field sketch of 4-SBr-4871 and examples of several associated artifacts, as described in the text. See Appendix A for specific site location.

chalcedony knife fragment was noted with bifacial working along one lateral edge, a blunt opposite edge, and a small amount of remaining cortex on the distal end. A closer examination of the site would undoubtedly reveal additional examples of such bifaces or further projectile point fragments.

Two types of pottery sherds were specifically observed at the site--a buff ware and a black-on-gray ware. The sherds, over twenty-five in number, are located in several small concentrations and are of a size which would indicate substantial-size pots. One pot sherd may have a design on the specimen.

The two metates recorded at this site are located in an area of concentration containing six pot sherds and 100+ flakes. A highly exfoliated granitic mano was also observed, although not in immediate association with the metates.

Additional cultural resources recorded within this site complex include a quartz cobble with evidence of battering, a large burnt bone fragment of an unknown animal species, and a piece of charcoal located within a rock overhang near the bone. The site may have a subsurface component. None of the artifacts at this site were recovered from the field.

4-SBr-4872, Metate and Flake Scatter. This site is situated at an elevation of 3,418 feet at the northern base of an isolated large granite boulder outcrop on a relatively flat alluvial fan. A well-developed intermittent drainage and site complex SBr-4871 occur to the east about 150 meters. The creosote bush scrub plant community is the predominant vegetation, and soils are light tan sands, silts, and gravels. Other than a dirt road just northeast, the site area has not been noticeably disturbed.

The site, along the northern base of a large granite boulder outcrop which may have been suitable for a wind shelter, consists of a flake scatter surrounding a low, small granite boulder with milling elements (Figure 11). The scatter contains approximately thirty secondary flakes. Predominant lithic material is quartz, although a few chalcedony flakes were also noted. A translucent chalcedony projectile point was recorded about 250 meters northwest of the flake scatter. The point has an unnotched concave base and measures 2.2x1.5 centimeters. An additional flake scatter of less than ten flakes was noted approximately 350 meters to the south.

Association of the projectile point, light flake scatter, and scatter with milling elements is uncertain. However, these materials may be outlying aspects of the occupation at site complex SBr-4871. None of these artifacts were recovered from the field.

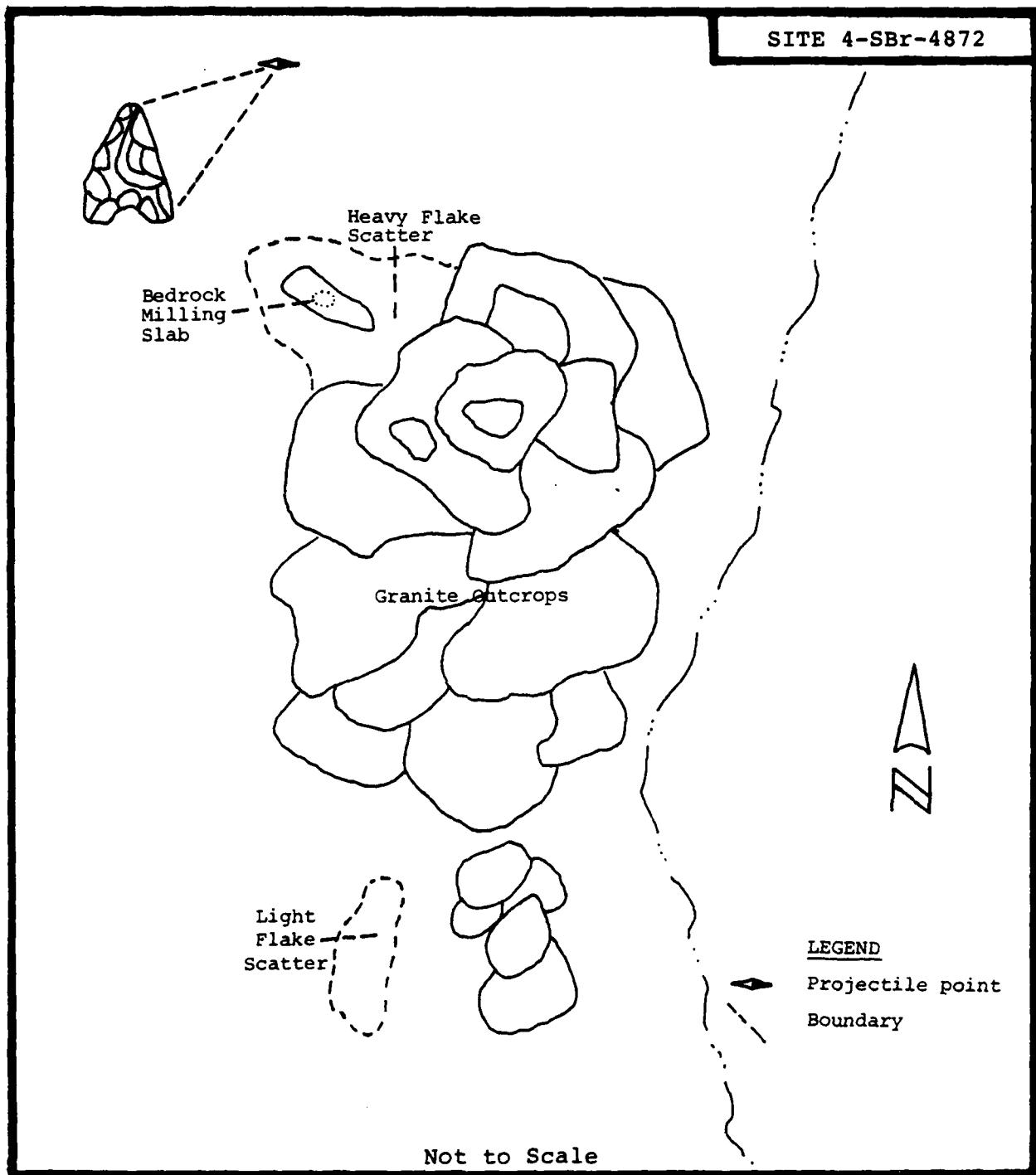


Figure 11
Field sketch of 4-SBr-4872, as described in the text. See Appendix A for specific site location.

4-SBr-4873, Flake Scatter. This site is located at an elevation of 3,300 feet on a slightly sloping alluvial fan approximately twenty meters west of a well-developed intermittent wash. An outcropping of granite boulders occurs along the western border. Soils are light tan sands, silts, and gravels, and vegetation is the creosote bush scrub plant community. Rodent burrows and several vehicle tracks occur throughout the site area.

The light-density flake scatter consists of at least eight black basalt secondary flakes, all medium in size with no cortex remaining (Figure 12). The basalt material appears very worn--flake angles are rounded and indistinct. One typological blade fragment was noted about sixty-five meters north of the flake scatter. This flake, also of similar black basalt, is 4.3x2.3 centimeters in size. None of the artifacts noted at this site were recovered from the field.

4-SBr-4874, Flake Scatter. This light-density flake scatter, approximately one by five meters in size, is located at the confluence of three main seasonal drainages at the base of the cut banks formed by these drainages. Elevation at this point is about 3,280 feet. Vegetation is a sparse creosote bush scrub plant community, and soils are loose silts and sands. The only probable disturbance to the site is from erosion.

The flake scatter, as observed, consists of six flakes, one typological blade, and one biface fragment, all located slightly buried in the loose surface sands surrounding several creosote bushes (Figure 13). The nature of the artifact deposition indicates the possibility of a buried component at the site. The flakes are small- and medium-size chalcedony secondary flakes, most very thin. The typological blade is of basalt, 5.5x2.4 centimeters in size, and has been flaked by soft-hammer percussion. The biface fragment is a white-gray, medium-quality chalcedony, 6.0x4.2x0.75 centimeters in size. Multiple flake scars are visible on both faces of the biface, no cortex is remaining, and it has a transverse basal fracture. None of the artifacts from this site were removed from the field.

4-SBr-4875, Flake Scatter. This flake scatter is located at an elevation of 3,050 to 3,085 feet on a slightly sloping, flat alluvial terrace, with well-developed intermittent washes along the east and west and evidence of drainage runoff throughout the site area. Vegetation includes Joshua trees and species of the creosote bush scrub plant community; soils are light tan silts and sands and gravels. Numerous military tank and vehicle tracks and discarded debris were noted throughout the site area.

The flake scatter is very widely and thinly spread over an area 150x30 meters. Artifacts include thirty or more flakes, one scraper, and one complete biface (Figure 14). The flakes are small- and medium-size secondary flakes of black basalt. Most

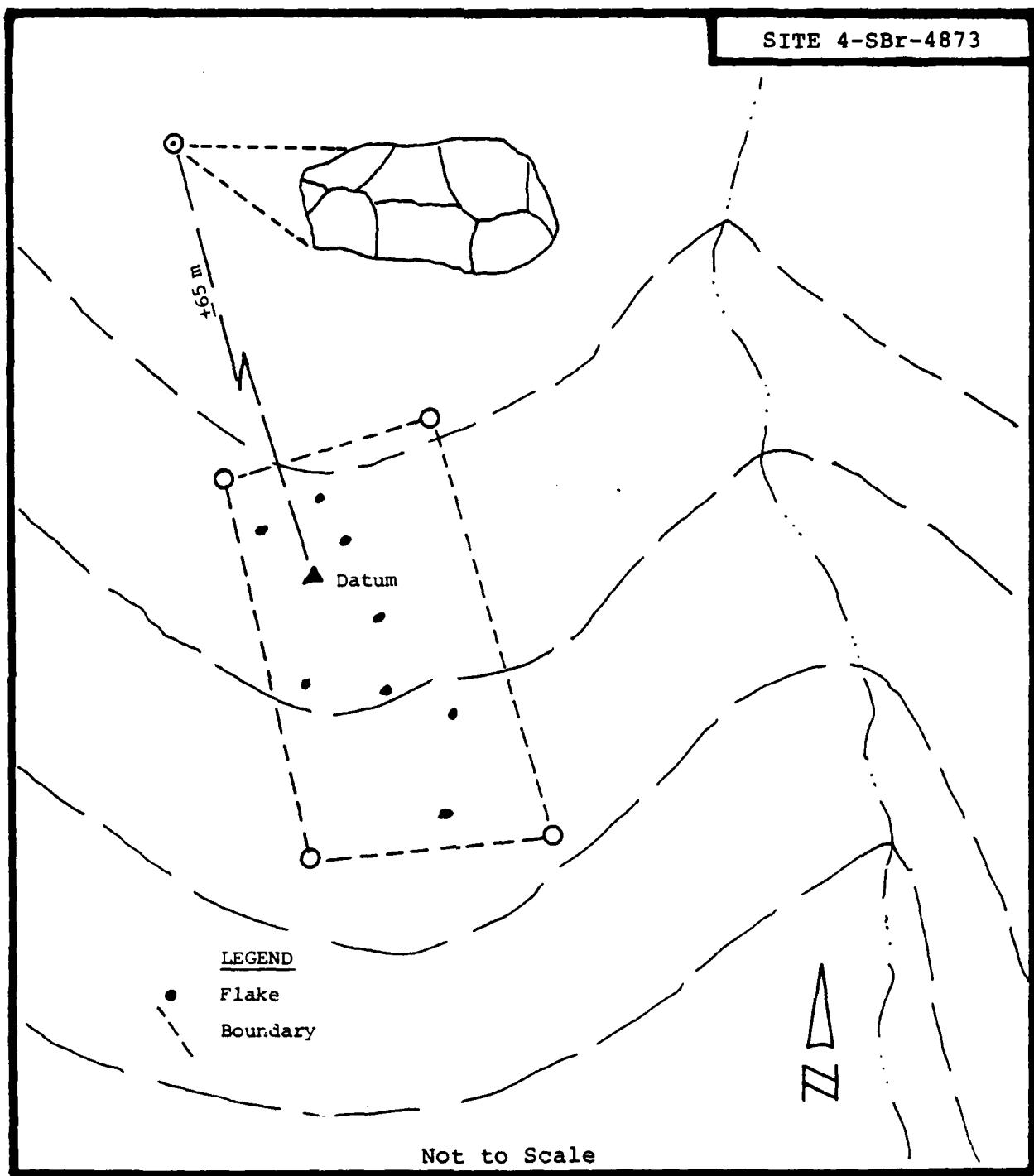


Figure 12

Field sketch of 4-SBr-4873 and associated typological blade, as described in the text. See Appendix A for specific site location.

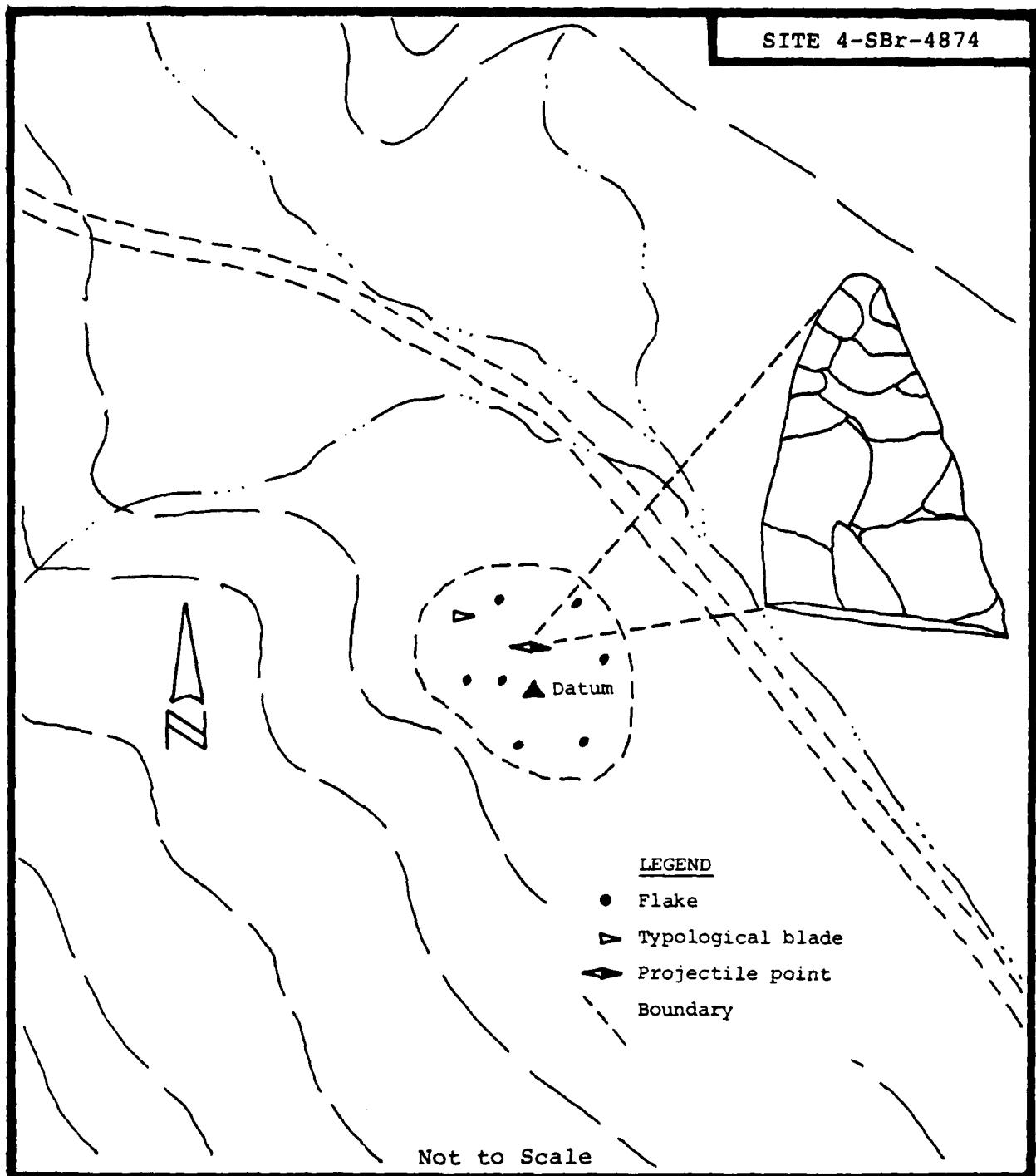


Figure 13

Field sketch of 4-SBr-4874 and stage 3 biface fragment, as described in the text. See Appendix A for specific site location.

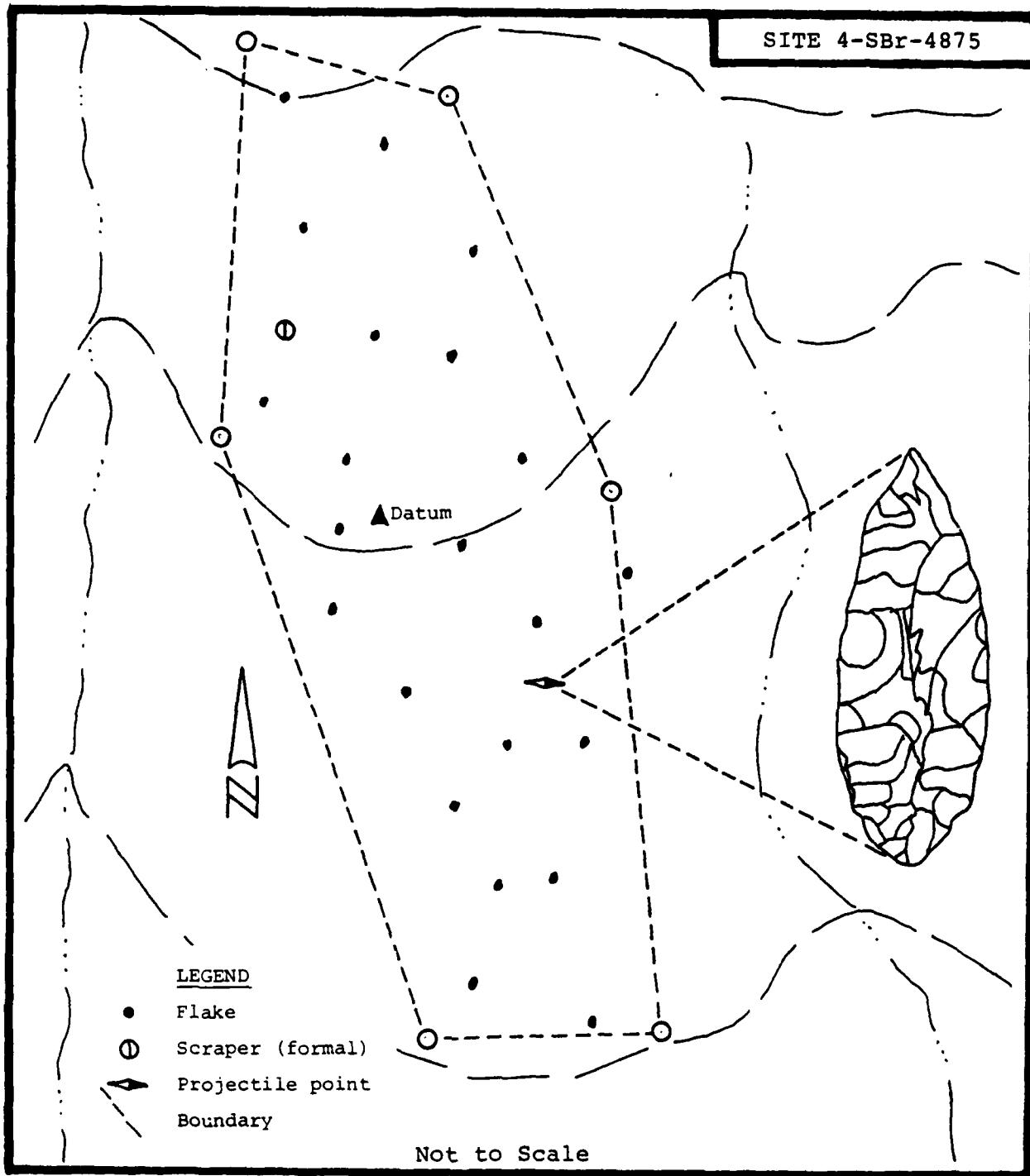


Figure 14

Field sketch of 4-SBr-4875 and associated stage 5 biface, as described in the text. See Appendix A for specific site location.

were buried or semi-buried in the loose surface sands and have probably been redeposited in this area. One flake of opaque white chalcedony was noted.

The scraper is of black basalt--apparently the same material as the area's flakes--and is 7.0x4.8x1.5 centimeters in size. A small amount of cortex is remaining on one face and evidence of utilization or retouch was noted along one lateral edge. This artifact was also found semi-buried in the surface soil.

The complete biface is a lanceolate-shaped artifact of a fine-grained, brownish orange mottled chalcedony. It measures 7.0x3.0x0.9 centimeters and has a slight basal tip and a small, indistinct notch near the base. Pressure flaking is well defined over both faces and no visible cortex remains. Morphology of the biface resembles Gypsum Cave types. None of the artifacts noted at this site were removed from the field.

SBCM-5045, Two Isolated Flakes. This isolated find is located at an elevation of 2,985 feet above mean sea level in a large intermittent wash near the intersection of several dirt roads; three additional isolated finds (SBCM-5046, -5047, -5048) were also located in the vicinity. Area vegetation includes species typical of the creosote bush scrub plant community, and soils at the location of the find are light tan silts and sands associated with the wash. In addition to probable disturbance to cultural resources in the area from wash-related erosion, various types of military debris were noted, indicative of ongoing military use of the area.

The isolate consists of two secondary flakes located approximately ten centimeters apart. No cortex was observed on either flake and they are both of the same approximate size, 2.5x1.0x0.2 centimeters. One flake is a white high-grade quartz and the other is a high-quality chert. Neither flake was removed from the field.

SBCM-5046, Isolated Flake. This isolated find was located in the same general area as SBCM-5045 and consists of one secondary flake approximately 2.1x2.0x0.9 centimeters in size. The lithic material is a semi-translucent, pinkish white chalcedony (or moss agate) with orange, brown, and white inclusions. Numerous pressure flakes have been removed from the dorsal face, leaving a relatively flat surface with no dorsal ridge. The flake is blade-like in morphology, but with a mesial fracture across the basal portion. Observable characteristics include a relatively prominent bulb of applied force and an obliterated platform with edge turning on the dorsal face. Both lateral edges show evidence of natural abrasion caused by post-depositional impacts. The mass form code of the flake is 8, three previous flake scars are visible on the dorsal face with feather and inverted

terminations, and no oxidation or patination is observable. The flake was recovered from the field during this reconnaissance.

SBCM-5047, Isolated Flake. This isolate was also located in the same area as SBCM-5045 and -5046. The flake is a very thin secondary flake, 3.0 centimeters long and 1.5 centimeters wide. The lithic material is a high-grade white chalcedony, very similar to the chalcedony flake at SBCM-5045. A hinge termination was noted and a medial fracture at the opposite edge. Approximately six flakes have been removed from the dorsal face. The flake was not collected from the field.

SBCM-5048, Isolated Flake. Located in the same area as SBCM-5045, -5046, and -5047, this isolated find is also a secondary flake. The lithic material is a high-grade white chalcedony, and the flake measures 0.5x1.0x0.2 centimeters. Possible evidence of edge wear is visible along one edge, and the flake has been broken along the lower edge. Also noted were a dorsal ridge and evidence of a prepared platform. The flake has the appearance of a blade fragment. It was not removed from the field.

SBCM-5049, Isolated Flake. This isolated find is located at an elevation of 3,180 feet in the same wash as SBCM-5045-5048, but approximately 1,350 meters to the north. The physical setting of the area is very similar, including a creosote bush scrub plant community and light tan sandy and silty soil. Evidence of disturbance to the area includes intersecting dirt roads, discarded military debris, and wash-related erosion.

The isolate is a secondary flake of a high-quality chert, 3.5x1.5x0.4 centimeters in size. Surface cracks throughout the flake indicate the possibility of heat treatment of the stone. The flake has a crushed platform, a combination termination, and several previous flake scars on the dorsal face. The flake is blade-like in morphology and was not removed from the field.

SBCM-5050, Isolated Flake. This isolated find was located on an alluvial fan of light tan sands and silts and overlying gravels approximately 900 meters east of the rock shelter at SBr-4866. Vegetation in the area is species associated with a creosote plant community. No seasonal drainages occur in the immediate area of the find.

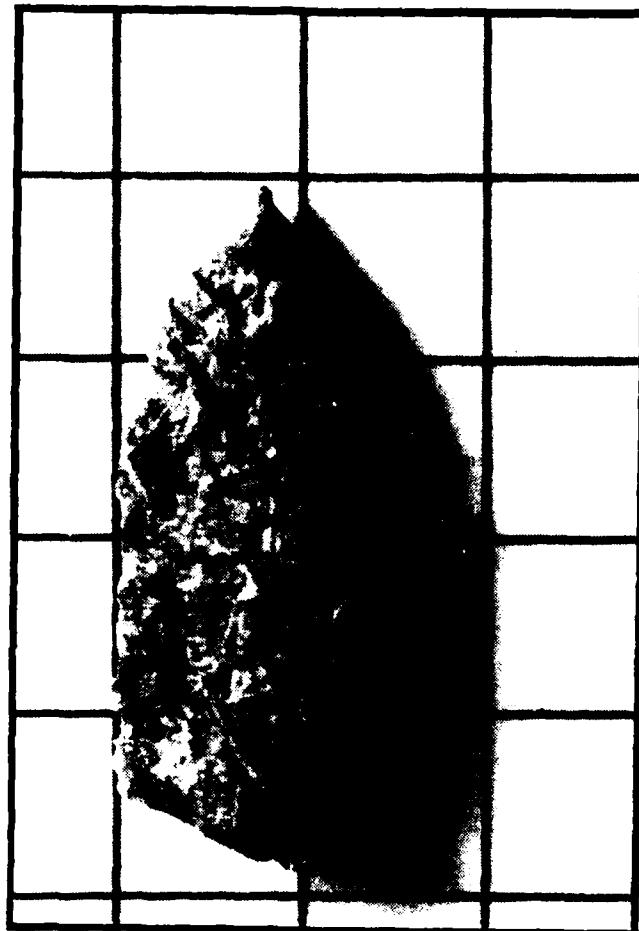
The isolate is a secondary flake of obsidian, with dimensions of 2.5x1.4x0.2 centimeters. A small striking platform and fabricator contact area are visible, both crushed. Also evident are compression rings and a bulb of applied force on the ventral face and a step termination. One flake was previously removed from the dorsal face with a feather termination. The flake has a mass form code of 5 (left central) and is not oxidized or patinated. Due to its potential for sourcing or dating, the flake was collected from the field.

SBCM-5051, Isolated Flake. This isolated flake was located on an open, relatively flat alluvial fan in the northern portion of the survey area. Elevation at this point is approximately 3,474 feet. The area contains the creosote bush scrub plant community, with tan sands and silts and decomposing granite soils. An intermittent wash occurs very near the isolated find, but the area has not been noticeably disturbed.

The isolate consists of one quartz flake, 4.6x2.2x1.0 centimeters in size and 11.8 grams in weight. The flake has several orange and brown inclusions throughout the quartz material and is blade-like in morphology. A striking platform, fabricator contact area, and bulb of applied force are present. The mass form code is 3 (central), and the flake has a combination termination. The dorsal face has about 0.1 percent remaining cortex and one previous flake scar (12 polar reference and feather termination). Light iron oxidation is visible on the dorsal face. This isolated find was removed from the field.

SBCM-5052, Isolated Projectile Point. This isolated find was located at an elevation of 3,353 feet, semi-buried in the loose surface sands of an intermittent wash. The area has a very sparse covering of creosote bush scrub plant community vegetation and light tan sands and silts and decomposing granite. Wash-related erosion may have relocated the artifact.

The isolate is a projectile point fragment of a yellow-brown jasper with numerous inclusions throughout the lithic material (Photograph 3). It is 3.8x1.6x0.5 centimeters in size and has a slightly transverse basal fracture. The prominent characteristic is the relatively sharp, 0.4-centimeter tip at one end, suggestive of a drill. The projectile point was recovered from the field for further typological and functional analysis.



Photograph 3: This photograph shows details of isolated artifact SBCM-5052. Note the needle-like retouched tip, a feature termed a "mucronate" tip variety by Van Buren (1974:80). This tip form may represent an attempt to reshape a previously broken point or may be a formal projectile point type not previously documented in the Mojave Desert. Grid squares equal 1 cm.

SECTION IV

RESOURCE SIGNIFICANCE ASSESSMENTS

The primary purpose of the present investigation was to locate, record, describe, and assess cultural resources against current criteria for determination of eligibility for inclusion on the National Register of Historic Places (36 CFR 60.4). These criteria state that "The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites . . . and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and . . . that have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR 60.4).

Another approach toward site evaluation criteria which can assist the investigator in determining the "quality of significance" was formulated by a task force in San Diego County which included representatives from the archaeological community (professional, avocational, and academic), construction industry, Native American groups, and administrative or governmental agencies. The basic criteria for evaluation include the cultural site's: 1) integrity (i.e., how intact or disturbed is the site), 2) regional aspect (how the site type is represented on a regional basis), 3) variability of the resource (frequency and density of the material remains), 4) ethnic value (whether the area of the resource holds special meaning for local Native Americans or other associated ethnic populations), 5) site type represented (whether the site contains features of interpretive or educational value), and 6) research potential (whether the site contains information pertinent to the continuing study of cultural processes and behaviors).

It is the opinion of the consultant that eleven of the resources recorded during this project, both individually and collectively, are likely to yield and/or have yielded information important to prehistory. Each is therefore considered a potential candidate for inclusion on the National Register of Historic Places. To review and assess the resources identified, criteria from both the Federal Regulation and the local government guidelines have been used to complement and refine the resource evaluation process. Site-by-site discussion of resource site assessment is presented below.

4-SBr-4864. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in good condition owing to its high state of preservation.
3. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Apparent variation in the distribution of artifacts that may provide data on social structure, the division of labor, and/or the organizational structure of the occupation.
3. Potential for relative dating through comparative studies of temporally/culturally diagnostic artifact forms.
4. Potential for obsidian hydration and trace element studies designed to assess relative dates of occupation, length of occupation, degree of site disturbance, and nature of economic exchange systems occupants participated in and to refine the local hydration rate.
5. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
6. Variation in the composition of various forms of cryptocrystalline silicates which could be assessed to further define criteria for lithic selection, travel to non-local quarry sources, or possible trade relationships.
7. Possibilities of refined studies of functional attributes in flaked lithic tools designed to permit

assessment of variation in exploitation, techniques of use, and possible temporal variation in tool function.

4-SBr-4865. This resource does not appear to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reason: Research potential of this site may have been exhausted by performance of the analysis contained in this present level of investigation.

4-SBr-4866. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in excellent condition owing to its high state of preservation.
3. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.
4. Cultural deposits were recorded within the boundaries of this resource site, and preliminary analysis suggests the site is likely to yield additional information important to the continuing interpretation of the history of the northwestern Mojave Desert region.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Potential for relative dating through comparative studies of temporally/culturally diagnostic artifact forms.
3. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.

4. Potential for the occurrence of faunal remains that will provide data on diet, cooking and butchering techniques, seasonality, and paleoenvironmental conditions.
5. Potential for subsurface deposits that are stratified and could thus provide information on change within a single culture or provide information regarding the relationships between two or more cultures/occupations.
6. Potential occurrence of preserved organic material (e.g., coprolites, basketry fragments, wooden artifacts) that could provide expanded information concerning the range of material culture, dietary variation, craft techniques, and paleoenvironmental variation.
7. Possibilities of refined studies of functional attributes in flaked lithic tools designed to permit assessment of variation in exploitation, techniques of use, and possible temporal variation in tool function.

4-SBr-4867. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Cultural provenience and material context of this resource are in excellent condition owing to its high state of preservation.
2. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
2. Potential occurrence of preserved organic material (e.g., coprolites, basketry fragments, wooden artifacts) that could provide expanded information concerning the range of material culture, dietary variation, craft techniques, and paleoenvironmental variation.

4-SBr-4868. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in good condition owing to its high state of preservation.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.

4-SBr-4869. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in good condition owing to its high state of preservation.
3. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.
4. Relatively extensive cultural deposits were recorded within the boundaries of this resource site, and preliminary analysis suggests the site is likely to yield additional information important to the continuing interpretation of the prehistory of the northwestern Mojave Desert region.
5. Cultural deposits were recorded within the boundaries of this resource site, and preliminary analysis suggests the site is likely to yield additional

information important to the continuing interpretation of the history of the northwestern Mojave Desert region.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Apparent variation in the distribution of artifacts that may provide data on social structure, the division of labor, and/or the organizational structure of the occupation.
3. Potential for relative dating through comparative studies of temporally/culturally diagnostic artifact forms.
4. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
5. Potential for subsurface deposits that are stratified and could thus provide information on change within a single culture or provide information regarding the relationships between two or more cultures/occupations.
6. Variation in the composition of various forms of cryptocrystalline silicates which could be assessed to further define criteria for lithic selection, travel to non-local quarry sources, or possible trade relationships.
7. Possibilities of refined studies of functional attributes in flaked lithic tools designed to permit assessment of variation in exploitation, techniques of use, and possible temporal variation in tool function.

4-SBr-4870. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.

2. Cultural provenience and material context of this resource are in good condition owing to its high state of preservation.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
3. Variation in stages of reduction of the same general form that could permit further understanding of technological variation in terms of manufacturing steps, application of variable flaking techniques, and, in combination with temporal data, potential assessment of technological change.
4. Variation in the composition of various forms of cryptocrystalline silicates which could be assessed to further define criteria for lithic selection, travel to non-local quarry sources, or possible trade relationships.

4-SBr-4871. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in good condition owing to its high state of preservation.
3. Cultural deposits were recorded within the boundaries of this resource site, and preliminary analysis suggests the site is likely to yield additional information important to the continuing interpretation of the history of the northwestern Mojave Desert region.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Apparent variation in the distribution of artifacts that may provide data on social structure, the division of labor, and/or the organizational structure of the occupation.
3. Potential for relative dating through comparative studies of temporally/culturally diagnostic artifact forms.
4. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
5. Potential for the occurrence of faunal remains that will provide data on diet, cooking and butchering techniques, seasonality, and paleoenvironmental conditions.
6. Variation in stages of reduction of the same general form that could permit further understanding of technological variation in terms of manufacturing steps, application of variable flaking techniques, and, in combination with temporal data, potential assessment of technological change.
7. Possibilities of refined studies of functional attributes in flaked lithic tools designed to permit assessment of variation in exploitation, techniques of use, and possible temporal variation in tool function.

4-SBr-4872. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in excellent condition owing to its high state of preservation.

3. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.
4. Relatively extensive cultural deposits were recorded within the boundaries of this resource site, and preliminary analysis suggests the site is likely to yield additional information important to the continuing interpretation of the prehistory of the northwestern Mojave Desert region.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Apparent variation in the distribution of artifacts that may provide data on social structure, the division of labor, and/or the organizational structure of the occupation.
3. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.

4-SBr-4873. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reason: Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Potential for comparison with other sites in order to assess variation in land use patterns, settlement

patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.

4-SBr-4874. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in good condition owing to its high state of preservation.
3. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Potential for relative dating through comparative studies of temporally/culturally diagnostic artifact forms.
3. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
4. Variation in stages of reduction of the same general form that could permit further understanding of technological variation in terms of manufacturing steps, application of variable flaking techniques, and, in combination with temporal data, potential assessment of technological change.

4-SBr-4875. This resource appears to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reasons:

1. Current investigation of this resource site has resulted in discovery of significant information regarding the prehistory of the northwestern Mojave Desert.
2. Cultural provenience and material context of this resource are in fair condition owing to its reasonable state of preservation.
3. Surface morphology of this resource suggests that great potential for intact subsurface deposits may be realized through continued examination of select areas within the boundaries.

This resource may be significant from a scientific perspective because it has the following characteristics and/or research potential:

1. Apparent variation in the morphology and composition of flaked lithic artifacts that may provide data on site function, special activity areas, problems of temporal placement, selection and use of particular raw materials, and cultural affiliation.
2. Potential for relative dating through comparative studies of temporally/culturally diagnostic artifact forms.
3. Potential for comparison with other sites in order to assess variation in land use patterns, settlement patterns, and regional resource exploitation, both in synchronic (contemporary) and diachronic (over time) frameworks.
4. Variation in stages of reduction of the same general form that could permit further understanding of technological variation in terms of manufacturing steps, application of variable flaking techniques, and, in combination with temporal data, potential assessment of technological change.
5. Variation in the composition of various forms of cryptocrystalline silicates which could be assessed to further define criteria for lithic selection, travel to non-local quarry sources, or possible trade relationships.

SBCM-5045, -5046, -5047, -5048, -5049, -5050, -5051, -5052. These resources do not appear to be eligible for inclusion to the National Register of Historic Places under criterion (d) of 60.4, 36 CFR 60, for the following reason: Research potential of these isolated finds may have been exhausted by performance of the analysis contained in this present level of investigation.

Aside from the scientific research potential of the resources assessed as being potentially eligible for inclusion on the National Register of Historic Places, each has value to the general public in an interpretive and educational sense. Realization of this value would be gained through collection and museum display rather than in situ observation due to current and future military land use.

Ethnic value is another aspect of significance that must be considered. Evaluation of ethnic values is best provided by representatives of associated local ethnic populations. The resources under consideration here possess the potential for elucidating Native American heritage values, and Native American consultation could provide interpretive information and statements regarding ethnic value.

SECTION V
CONCLUSIONS AND RECOMMENDATIONS

The cultural resources located during this survey predominantly represent Late Prehistoric manifestations of aboriginal American Indian land use activities, with limited evidence of Intermediate Milling Stone age residues. Further, the majority of the relatively extensive site deposits reflect multiple-activity elements versus special use locations, such as quarry sites or locations for stone tool manufacturing only.

Cornerstone Research presents the following recommendations for long-term resource conservation considerations. Cultural scientists have long held that even the most limited features or deposits present nonrenewable opportunities to evaluate or verify theories, hypotheses, and interpretations regarding human behavior and cultural evolution. This generalization is true in that any measurable elements which are affected by human alteration have the potential to retain signatures of cultural and ethno-historical events. Due to practical economics and current political orientations regarding information gain versus manpower and monetary expenditures, evaluations and therefore recommendations and administrative policies assume the posture of assessing cultural residue in relation to significant human heritage values.

Considering that the goal of any administrative action regarding these cultural sites would ideally be to identify and conserve (through formal preservation plans) those resources which exhibit significant heritage values, the problem then is to establish a foundation by which to gauge the relative merit or meaningfulness of discrete deposits or features in relation to more complex socio-cultural manifestations on a wide regional scale. With this approach, the meaningfulness of such limited activity evidence as an isolated specimen must be examined to discern the relationships of these finds with the more extensive cultural deposits. Therefore, isolated finds SBCM-5045-5052 should be analyzed and evaluated in terms of subregional land use practices and potential associations with other area activity localities. Results of these evaluations should be professionally disseminated and the physical specimens permanently curated for future display, examination, and independent interpretation.

Similarly, cultural deposits of a more intensive nature, such as intermediate-density material occurrences and individual features, provide more opportunities to determine similarities and/or differences between other activity manifestations. Individually, these light- to moderate-intensity sites would not provide exceptional "quality of significance." However, a collective view of these deposits in conjunction with other multiple-use deposits located in the region substantially increases the

potential data yield and meaningfulness of the light-intensity occurrences in terms of settlement and subsistence, social organization structure, demographics, carrying capacity, and other environmental and anthropological relationships. Another important consideration is the potential for these light-intensity deposits to contain concealed subsurface components; although this likelihood is limited, it should be addressed.

Cornerstone Research recommends that a research design be formulated and implemented to further examine content and morphology of these sites--SBr-4867, -4868, -4870, -4873, -4874, and -4875--in relation to other primary activity centers in the region. The research plan should include systematic data recovery, surface collection, and limited subsurface exploration, coupled with complete state-of-the-art analysis and interpretation.

SBr-4865, a stacked rock cairn, should be further evaluated to establish its cultural affiliation. This may include archival research to test the potential for the feature to be associated with historic American mining activities. A higher heritage value might be assigned if the cairn was associated with an aboriginal period due to differing construction purposes (i.e., a burial or ceremonial cairn versus a claim marker).

The remaining cultural deposits located during this study--SBr-4864, -4866, -4869, -4871, and -4872--represent complex, multi-component aboriginal residual concentrations. The principal difference between these cultural resources and those previously discussed is that each of the latter has the potential to retain exceptional "quality of significance" and integrity in terms of the scientific data base and may be individually eligible for nomination to the National Register (see Section IV).

Cornerstone Research recommends that a comprehensive formal research design be operationalized for the more extensive sites to include, but not be limited to, a multiple-phased, problem-oriented data recovery and subsurface exploration program to establish the general depositional history and record of variable site functions. This will serve to test numerous hypotheses regarding socio-cultural interrelationships.

Additional data recovery or documentation may be appropriate to clarify potential interrelationships between the various light- and medium-density activity centers and the isolated finds. Further documentation may include detailed mapping, frequency counts of key diagnostic elements, and limited subsurface exploration. Each of the cultural sites discussed above should be considered potentially associated with other cultural resources documented on and near the Fort Irwin Military Reservation and should be protected from negative impacts while these

possible associations are assessed and determinations of eligibility verified.

All recovered artifacts have been analyzed and stabilized and clearinghouse documents prepared and submitted to the San Bernardino County Museum. The photograph records and site forms have been cataloged and filed and individual site descriptions also prepared. To achieve immediate resource protection, Cornerstone Research recommends that all appropriate military commanders, range control coordinators, and field maneuver planning staff members be made aware of the existence of these sensitive resources. Operations should not be scheduled which may cause adverse impacts until the cultural deposits are defined as conservation preserves or potential impacts are effectively mitigated through data recovery and synthesis procedures.

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APPENDIX A

Locational Data

Locational data and maps are on file with the Interagency Archeological Services Division-San Francisco.

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